

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): An image recording apparatus for exposing a photosensitive material to record an image on the photosensitive material, comprising a nipping and conveyance arrangement for aiding in conveying the photosensitive material along a conveyance path in the image recording apparatus, the nipping and conveyance arrangement comprising:

two pairs of conveyance rollers mountable in the image recording apparatus, with one pair disposed upstream from an exposure position relative to conveyance direction of the photosensitive material along the conveyance path during exposure, and one other pair disposed downstream from the exposure position, in which the pairs of conveyance rollers nip and convey the photosensitive material during exposure, and;

a detector detecting a leading edge of the photosensitive material, wherein at least the upstream pair of conveyance rollers nipping at least the leading edge of the photosensitive material when the photosensitive material passes through the upstream pair of conveyance rollers and the pairs of conveyance rollers releasing the photosensitive material, at least momentarily, after the leading edge has passed through the downstream pair of conveyance rollers based on an output of the detector.

2. (original): The image recording apparatus of claim 1, further comprising an alignment section for aligning edges substantially parallel to the conveyance path of the photosensitive

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material, in a direction substantially orthogonal to the conveyance path, mountable upstream from the two pairs of conveyance rollers.

3. (original): The image recording apparatus of claim 1, wherein the two pairs of conveyance rollers release the photosensitive material when the photosensitive material is rewound.

4 (previously presented): The image recording apparatus of claim 1, said detector comprising at least one sensor for detecting that the leading edge of the photosensitive material has passed through at least one of the two pairs of conveyance rollers, the at least one sensor being disposed in the vicinity of the upstream pair of conveyance rollers.

5. (original): The image recording apparatus of claim 2, wherein the two pairs of conveyance rollers release the photosensitive material when the photosensitive material is rewound.

6. (original): The image recording apparatus of claim 2, wherein the alignment section includes a pair of positioning guides, movable forwards and away from each other in the direction substantially orthogonal to the conveyance path of the photosensitive material, and pairs of registration rollers for pressing the edges substantially parallel to the conveyance path of the photosensitive material against at least one of the positioning guides.

7. (original): The image recording apparatus of claim 6, wherein the alignment section further includes shafts which extend along the direction substantially orthogonal to the conveyance path of the photosensitive material, and sliders which are slidably attached along the shafts, with a portion of each positioning guide supported by each slider and another portion of each positioning guide supported by each shaft.

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8. (original): The image recording apparatus of claim 6, further comprising a mechanism for raising and lowering each pair of conveyance rollers, the mechanism being disposed adjacent to each edge substantially parallel to the conveyance path of the photosensitive material, wherein the mechanism includes an eccentric cam, a plate which raises and lowers due to rotation of the eccentric cam, sliding members which are engaged with the plate, and springs for urging the sliding members.

9. (original): The image recording apparatus of claim 2, further comprising a mechanism for raising and lowering each pair of conveyance rollers, the mechanism being disposed adjacent to each edge substantially parallel to the conveyance path of the photosensitive material, wherein the mechanism includes an eccentric cam, a plate which raises and lowers due to rotation of the eccentric cam, sliding members which are engaged with the plate, and springs for urging the sliding members.

10 (previously presented): The image recording apparatus of claim 2, said detector comprising at least one sensor for detecting that the leading edge of the photosensitive material has passed through at least one of the two pairs of conveyance rollers, the at least one sensor being disposed in the vicinity of the upstream pair of conveyance rollers.

11. (original): An image recording method for exposing a photosensitive material to record an image on the photosensitive material, the image recording method comprising a method for reducing jamming of photosensitive material in an image recording apparatus used for image exposure of the photosensitive material, the method for reducing jamming of photosensitive material comprising the steps of:

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(a) conveying the photosensitive material along a conveyance path in the image recording apparatus, past at least one roller that is located upstream from an exposure position, relative to conveyance direction of the photosensitive material during image exposure of the photosensitive material;

(b) nipping the photosensitive material with said at least one roller after a leading edge of the photosensitive material has been conveyed past said at least one roller on the conveyance path, and also after the leading edge of the photosensitive material has been conveyed past said at least one roller, positioning at least one other roller downstream from the exposure position at a location which will nip the photosensitive material when the photosensitive material is conveyed past said at least one other roller; and

(c) positioning said at least one and said at least one other rollers at locations that do not nip the photosensitive material after the leading edge of the photosensitive material has been conveyed past said at least one other roller on the conveyance path.

12. (original): The image recording method of claim 11, further comprising the step of positioning said at least one and said at least one other rollers at locations that do not nip the photosensitive material when the photosensitive material is rewound.

13. (original): The image recording method of claim 12, further comprising the step of detecting when the leading edge of the photosensitive material has been conveyed past said at least one roller on the conveyance path.

14. (original): The image recording method of claim 13, further comprising the step of detecting when the leading edge of the photosensitive material has been conveyed past said at least one other roller on the conveyance path.

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15. (original): An apparatus for aiding in conveying photosensitive material along a conveyance path in an image recording device for image exposure, the apparatus comprising:

(a) a first pair of conveyance rollers mountable across the conveyance path from one another, the conveyance rollers being movable relative to each other towards and away from each other from a location that does not nip the photosensitive material when the photosensitive material is on the conveyance path between the first conveyance rollers, and another location nipping the photosensitive material upstream from an exposure position with respect to conveyance direction of the photosensitive material during image exposure;

(b) a second pair of conveyance rollers mountable across the conveyance path from one another, the second conveyance rollers being movable relative to each other towards and away from each other from a location that does not nip the photosensitive material when the photosensitive material is on the conveyance path between said second pair of conveyance rollers, and another location nipping the photosensitive material downstream from the exposure position with respect to conveyance direction of the photosensitive material during image exposure; and

(c) a control arrangement which moves the first conveyance rollers towards each other to the location nipping the photosensitive material upstream from the exposure position when a leading edge of the photosensitive material has passed through the first pair of conveyance rollers, and when the leading edge of the photosensitive material has passed through the second pair of conveyance rollers, the control arrangement moves the first and second conveyance rollers to locations that do not nip the photosensitive material.

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16. (original): The apparatus of Claim 15, wherein the control arrangement includes a rotatably mounted cam, which when the cam is rotated to one angular position, moves each roller towards one other roller in each of the first and the second pair of conveyance rollers, and when the cam is rotated to another angular position, moves each roller away from the other roller in each pair.

17. (original): The apparatus of Claim 16, further comprising a pair of positioning guides mountable across the conveyance path from one another in a direction substantially orthogonal to the conveyance path of the photosensitive material, the positioning guides being movable relative to one another, towards and apart from each other.

18. (original): The apparatus of Claim 17, wherein the control arrangement includes at least one sensor, which indicates presence of the photosensitive material at a predefined location on the conveyance path.

19. (original): The apparatus of Claim 18, wherein the control arrangement moves the positioning guides relative to one another after the leading edge of the photosensitive material has passed through the second pair of conveyance rollers.

20. (original): The apparatus of Claim 19, wherein the control arrangement returns the first and second conveyance rollers to locations nipping the photosensitive material upstream and downstream from the exposure position after moving the positioning guides.

21. (previously presented): An image recording apparatus for exposing a photosensitive material to record an image on the photosensitive material, comprising a nipping and conveyance arrangement for aiding in conveying the photosensitive material along a conveyance path in the image recording apparatus, the nipping and conveyance arrangement comprising:

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two pairs of conveyance rollers mountable in the image recording apparatus, with one pair disposed upstream from an exposure position relative to conveyance direction of the photosensitive material along the conveyance path during exposure, and one other pair disposed downstream from the exposure position, and

a control means controlling movement of the two pairs of conveyance rollers, wherein at least the upstream pair of conveyance rollers nip at least a leading edge of the photosensitive material when the photosensitive material passes through the upstream pair of conveyance rollers and the pairs of conveyance rollers release the photosensitive material after the leading edge has passed through the downstream pair of conveyance rollers.

22. (new): The apparatus of claim 5 further comprising a driver, said driver receiving the output of the detector and activating movement of the pairs of conveyance rollers based on the output of the detector.

23. (new): The apparatus of claim 22, wherein said driver includes rotatable cams connected to the pairs of rollers to activate movement according to the output of the detector.

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AMENDMENTS TO THE DRAWINGS

FIGS. 5 and 6 are amended to add the designations “CAM SHAFT,” “DRIVE TRANSMISSION SYSTEM” and “MOTOR.”

FIG. 9 is a new drawing added to illustrate the drive transmission system portion of FIG.

5.

Attachment: Replacement Sheets (FIGS. 5 and 6)
New Sheet (FIG. 9)